FORM PTO-1390 (REV 10-94)	U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		10873.641USWO
		U S APPLICATION NO (If known, see 37 C F R 1 5) Unknown 09/786611

INTERNATIONAL APPLICATION NO	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/JP00/04562	July 6, 2000	July 7, 1999

TITLE OF INVENTION

AV DATA RECORDING APPARATUS AND METHOD, DISK RECORDED WITH THE AV DATA......

APPLICANT(S) FOR DO/EO/US

ITO et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U S C 371

3. [X] This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(l).

4. [ ] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
    a. [X] is transmitted herewith (required only if not transmitted by the International Bureau).
    b. [X] has been transmitted by the International Bureau.
    c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US)

6. [X] A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. [X] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
    a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau)
    b. [ ] have been transmitted by the International Bureau.
    c. [ ] have not been made; however, the time limit for making such amendments has NOT expired
    d. [X] have not been made and will not be made.

8. [ ] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).

10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

12. [X] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [X] A FIRST preliminary amendment.
    [ ] A SECOND of SUBSEQUENT preliminary amendment.

14. [ ] A substitute specification.

15. [ ] A change of power of attorney and/or address letter.

16. [X] Other items or information: International Search Report; PCT/IB/301; PCT/IB/304; PCT/IB/308; PCT Request and translation

U.S. APPLICATION NO (If known, see 37 C F R 1 5) Unknown **09/786611**	INTERNATIONAL APPLICATION NO PCT/JP00/04562	ATTORNEY'S DOCKET NUMBER 10873.641USWO

17. [X] The following fees are submitted:	CALCULATIONS PTO USE ONLY

BASIC NATIONAL FEE (37 CFR 1.492(a) (1)-(5)):

Search Report has been prepared by the EPO or JPO...$860.00

International preliminary examination fee paid to USPTO
(37 CFR 1.492(a)(1))..$690.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482)
but international search fee paid to USPTO (37 CFR 1.445(a)(2))............................$710.00

Neither international preliminary examination fee (37 CFR 1.482) nor
international search fee (37 CFR 1.445(a)(3)) paid to USPTO $1000.00

International preliminary examination fee paid to USPTO (37 CFR 1 482)
and all claims satisfied provisions of PCT Article 33(2)-(4) $100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =	$860.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$0	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	90 −20 =	70	X $18.00	$1260.00	
Independent claims	22 −3 =	19	X $80.00	$1520.00	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $260.00	$0	
TOTAL OF ABOVE CALCULATIONS =				$3640.00	
Reduction by 1/2 for filing by small entity, if applicable. Small entity status is claimed pursuant to 37 CFR 1.27				$0	
SUBTOTAL =				$3640.00	
Processing fee of **$130.00** for furnishing the English translation later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(f). +				$0	
TOTAL NATIONAL FEE =				$3640.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +				$40.00	
TOTAL FEES ENCLOSED =				$3680.00	

	Amount to be: refunded	$0
	charged	$0

a.   [X] Checks in the amount of $3640.00 and $40.00 to cover the above fees is enclosed.

b.   [ ] Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees.
     A duplicate copy of this sheet is enclosed.

c.   [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
     overpayment to Deposit Account No 13-2725

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO
  Douglas P. Mueller
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SIGNATURE· _Curtis B. Hamre_

NAME: Curtis B. Hamre

REGISTRATION NUMBER: 29,165

S/N unknown   <u>PATENT</u>

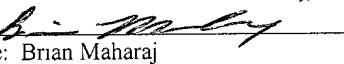<u>IN THE UNITED STATES PATENT AND TRADEMARK OFFICE</u>

Applicant:	ITO et al.	Docket No.:	10873.641USWO
Serial No.:	unknown	Filed:	concurrent herewith
Int'l Appln No.:	PCT/JP00/04562	Int'l Filing Date:	July 6, 2000
Title:	AV DATA RECORDING APPARATUS AND METHOD, DISK....		

<u>PRELIMINARY AMENDMENT</u>

Box PCT
Assistant Commissioner for Patents
Washington, D. C. 20231

Dear Sir:

In connection with the above-identified application filed herewith, please enter the

following preliminary amendment (marked-up copies attached):

<u>IN THE SPECIFICATION</u>

A courtesy copy of the present specification is enclosed herewith. However, the

World Intellectual Property Office (WIPO) copy should be relied upon if it is already in the U.S.

Patent Office.

Please replace the paragraph beginning at page 5, line 17, with the following:

--FIG. 33 shows a record content in an AV data recording/reproducing apparatus

using a DVD-RAM, and the content is subject to post-recording. When a MPEG

program stream that will be post-recorded is recorded in DVD-RAM as shown in FIG. 27, a section 10 generating dummy packet for post-recording shown in FIG. 33 executes recording by mixing V_PCKs, A_PCKs and also dummy packets (hereinafter, each dummy packet is referred to as "D_PCK"). During post-recording (in recording the secondary audio), only the video (or a video and the secondary audio) is reproduced, and at the same time, compressed secondary audio is padded in the D_PCK location as a separate secondary audio other than the primary audio.--

Please replace the paragraph beginning at page 24, line 31, with the following:

--FIG. 35 is a diagram showing a recording form of an AV data recording/reproducing apparatus in an example of the present invention.--

IN THE DRAWINGS

Please replace original figures 3, 27 and 36 with the attached new sheets. The marked-up copies indicating the changes are attached.

IN THE CLAIMS

Please cancel claims 1-50.

Please add the following new claims:

51. (New) An AV data recording apparatus comprising a transport stream assembling section to divide an audio signal and a video signal into transport packets and to assemble a plurality of the transport packets as one transport stream, and a recording section to record the transport

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stream;

the recording section comprising a logical block managing section to manage whether a logical block on a disk is used or not, a continuous data area detecting section to detect a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and a recording control section to determine a logical block number of the continuous data area on which the transport stream is to be recorded,

wherein the transport stream is recorded continuously on the plural continuous data areas detected by the continuous data area detecting section.

52. (New) The AV data recording apparatus according to claim 51, wherein the continuous data area comprises plural continuous logical blocks that enable recording at a maximum recording/reproducing rate during at least a period required for securing reproduction data for a maximum move time of a reading/writing head at the continuous data area detection section.

53. (New) The AV data recording apparatus according to claim 51, wherein the transport stream is assembled by dividing an audio signal and a video signal into transport packets, configuring the plural transport packets for a predetermined time length as one unit packet, and by aligning the unit packets.

54. (New) The AV data recording apparatus according to claim 52, wherein the transport stream is assembled by dividing an audio signal and a video signal into transport packets, configuring the plural transport packets for a predetermined time length as one unit packet, and by aligning the unit packets.

55. (New) The AV data recording apparatus according to claim 51, wherein a transport stream

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comprising transport packets based on digital broadcast using MPEG is assembled at the transport stream assembling section.

56. (New) The AV data recording apparatus according to claim 52, wherein a transport stream comprising transport packets based on digital broadcast using MPEG is assembled at the transport stream assembling section.

57. (New) An AV data recording apparatus comprising a PES (Packetized Elementary Stream) stream assembling section to divide an audio signal and a video signal into PES packets and to assemble a plurality of the PES packets as one PES stream, and a recording section to record the PES stream;

the recording section comprises a logical block managing section to manage whether a logical block on a disk is used or not, a continuous data area detecting section to detect a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and a recording control section to determine a logical block number of the continuous data area on which the PES stream is to be recorded;

wherein the PES stream is recorded continuously on the plural continuous data areas detected by the continuous data area detecting section.

58. (New) The AV data recording apparatus according to claim 57, wherein the continuous data area comprises plural continuous logical blocks that enable recording at a maximum recording/reproducing rate during at least a period required for securing reproduction data for a maximum move time of a reading/writing head at the continuous data area detection section.

59. (New) The AV data recording apparatus according to claim 57, wherein the PES stream is

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assembled by dividing an audio signal and a video signal into PES packets, configuring the plural PES packets for a predetermined time length as one unit packet, and by aligning the unit packets.

60. (New) The AV data recording apparatus according to claim 58, wherein the PES stream is assembled by dividing an audio signal and a video signal into PES packets, configuring the plural PES packets for a predetermined time length as one unit packet, and by aligning the unit packets.

61. (New) An AV data recording apparatus comprising a writing section to write data in a logical block on a disk, a reading section to read data recorded in a logical block, and a deletion control section to delete data by controlling the reading section and the writing section;

the deletion control section deleting a part of data recorded as one file on a plurality of logical blocks by dividing the data into three areas comprising an effective data area before a deletion area, an effective data area within the last of logical blocks including the deletion area, and an effective data area following the last logical block, by closing forward undeleted effective data within the last logical block inside the last block, and by treating the three areas as one file.

62. (New) An AV data recording apparatus comprising a system stream assembling section to assemble an audio signal and a video signal as one system stream, and a recording section to record the system stream;

the recording section comprising a logical block managing section to manage whether

a logical block on a disk is used or not, a continuous data area detecting section to detect a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and a recording control section to determine a logical block number of the continuous data area on which the system stream is to be recorded;

wherein the AV data recording apparatus further comprises a post-recording control section to record continuously the system stream on the plural continuous data areas detected by the continuous data area detecting section, and at the same time, to record a plurality of dummy data being equal to the logical block in total size on the logical block so as to replace only the dummy data with audio data at the time of post-recording.

63. (New) The AV data recording apparatus according to claim 62, wherein the post-recording control section records the system stream continuously on a plurality of the continuous data areas detected by the continuous data area detecting section, and at the same time, records a plurality of dummy data whose total size being larger than a logical block in at least one of the logical blocks; and

replaces only the dummy data included in a predetermined logical block with audio data at the time of post-recording.

64. (New) An AV data recording apparatus comprising a writing section to write data in a logical block on a disk, a reading section to read data recorded in a logical block, and a deletion control section to delete data by controlling the reading section and the writing section;

wherein when the deletion control section deletes a part of data recorded as one file on a plurality of logical blocks, a first half and a latter half of the data are treated as one file,

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where the first half comprises a dummy packet after the effective data area followed by the deletion area until data of the effective data area before the deletion area reach a border of a logical block, and the latter half comprises a dummy packet added to provide packets continuously before the effective data area following the deletion area, ranging from the border of the logical block to a starting point of the effective data area following the deletion area.

65. (New) An AV data recording apparatus comprising a writing section to write data in a logical block on a disk, a reading section to read data recorded in a logical block, and a deletion control section to delete data by controlling the writing section and the reading section;

wherein when the deletion control section deletes a former part of data recorded as one file on a plurality of logical blocks by regarding the part as a deletion area and retaining a latter part as an effective data area,

data comprising a dummy packet added to provide packets continuously before the effective data area ranging from a border of a logical block preceding an end of the deletion area to an end of the effective data area, and also the effective data area are treated as one file.

66. (New) An AV data recording apparatus comprising a writing section to write data in a logical block on a disk, and a management information writing section to write management information of the data written in a logical block;

the management information writing section writing the data management information comprising a starting position of the data on a logical block, length of the data, and identification of a logical block on which the data are written.

67. (New) An AV data recording apparatus comprising a writing section to write data in a logical block on a disk, a reading section to read data recorded in a logical block, and a deletion control section to delete data by controlling the writing section and the reading section;

the writing section, at the time of writing data, writing separately the data management information comprising a starting position of the data on a logical block, a length of the data and identification of a logical block on which the data are written;

the deletion control section deleting a part of data recorded as one file on a plurality of logical blocks by dividing the data into two areas: an effective data area before a deletion area and an effective data area after the deletion area, and by treating the two areas as one file.

68. (New) The AV data recording apparatus according to claim 61, wherein a DIT packet is inserted additionally between the effective data area before the deletion area and the other effective area after the deletion area so as to record at the deletion control section.

69. (New) The AV data recording apparatus according to claim 64, wherein a DIT packet is inserted additionally between the effective data area before the deletion area and the other effective area after the deletion area so as to record at the deletion control section.

70. (New) The AV data recording apparatus according to claim 67, wherein a DIT packet is inserted additionally between the effective data area before the deletion area and the other effective area after the deletion area so as to record at the deletion control section.

71. (New) An AV data recording apparatus comprising a transport stream assembling section

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having transmission timing information that divides an audio signal and a video signal into transport packets and assembles a transport stream having transmission timing information by repeating a set of the transport packet and transmission timing information for transport packets, and a recording section to record the transport stream having transmission timing information;

the recording section comprising a logical block managing section to manage whether a logical block on a disk is used or not, a continuous data area detecting section to detect a continuous data area that ensures a realtime continuous reproduction of the audio signal and the video signal, and a recording control section to determine a logical block number of the continuous data area on which the transport stream having transmission timing information is to be recorded;

wherein the transport stream having transmission timing information is recorded continuously on the plural continuous data areas detected by the continuous data area detecting section.

72. (New) The AV data recording apparatus according to claim 71, wherein the transport stream is assembled at the transport stream assembling section having transmission timing information, by dividing the audio signal and the video signal into transport packets, configuring one unit packet by allocating repeatedly a set comprising a plurality of the transport packets for a predetermined time length and transmission timing information for every transport packet, and by aligning the unit packets.

73. (New) The AV data recording apparatus according to claim 71, wherein a transport stream comprising transport packets based on digital broadcast using MPEG is assembled at the

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transport stream assembling section having transmission timing information.

74. (New) The AV data recording apparatus according to claim 71, wherein a counter value of 27MHz is used as transmission timing information at the transport stream assembling section having transmission timing information.

75. (New) The AV data recording apparatus according to claim 71, wherein a counter value of 24.576MHz is used as transmission timing information at the transport stream assembling section having transmission timing information.

76. (New) An AV recording apparatus comprising a receiving section for receiving a transport stream in real time from a channel, and a recording section to record the transport stream;

the recording section comprising a logical block managing section to manage whether a logical block on a disk is used or not, a continuous data area detecting section to detect a continuous data area that ensures realtime continuous reproduction of the transport stream, and a recording control section to determine a logical block number of the continuous data area on which the transport stream is to be recorded;

the transport stream being recorded continuously on the plural continuous data areas detected by the continuous data area detecting section.

77. (New) An AV data recording apparatus comprising a receiving section for receiving a transport stream in real time from a channel, and a recording section to record a set of a transport packet and reception timing information as one continuous transport stream having transmission timing information;

the recording section comprising a logical block managing section to manage whether

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a logical block on a disk is used or not, a continuous data area detecting section to detect a

continuous data area that ensures realtime continuous reproduction of the transport stream

having transmission timing information, and a recording control section to determine a logical

block number of the continuous data area on which the transport stream having transmission

timing information is to be recorded;

where the transport stream having transmission timing information is recorded

continuously on a plurality of the continuous data areas detected by the continuous data area

detecting section.

78. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 51, a reproducing section to read a transport stream

recorded on a disk, a timing generating section to calculate timing for transmitting a transport

stream in accordance with MPEG standard, and a 1394 interface section to send a transport

packet onto a 1394 transmission channel;

where the 1394 interface section sends a transport packet onto a 1394 transmission

channel in accordance with transmission timing calculated by the transmission timing

generating section.

79. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 52, a reproducing section to read a transport stream

recorded on a disk, a timing generating section to calculate timing for transmitting a transport

stream in accordance with MPEG standard, and a 1394 interface section to send a transport

packet onto a 1394 transmission channel;

where the 1394 interface section sends a transport packet onto a 1394 transmission

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channel in accordance with transmission timing calculated by the transmission timing

generating section.

80. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 53, a reproducing section to read a transport stream

recorded on a disk, a timing generating section to calculate timing for transmitting a transport

stream in accordance with MPEG standard, and a 1394 interface section to send a transport

packet onto a 1394 transmission channel;

where the 1394 interface section sends a transport packet onto a 1394 transmission

channel in accordance with transmission timing calculated by the transmission timing

generating section.

81. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 54, a reproducing section to read a transport stream

recorded on a disk, a timing generating section to calculate timing for transmitting a transport

stream in accordance with MPEG standard, and a 1394 interface section to send a transport

packet onto a 1394 transmission channel;

where the 1394 interface section sends a transport packet onto a 1394 transmission

channel in accordance with transmission timing calculated by the transmission timing

generating section.

82. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 55, a reproducing section to read a transport stream

recorded on a disk, a timing generating section to calculate timing for transmitting a transport

stream in accordance with MPEG standard, and a 1394 interface section to send a transport

packet onto a 1394 transmission channel;

where the 1394 interface section sends a transport packet onto a 1394 transmission

channel in accordance with transmission timing calculated by the transmission timing

generating section.

83. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 56, a reproducing section to read a transport stream

recorded on a disk, a timing generating section to calculate timing for transmitting a transport

stream in accordance with MPEG standard, and a 1394 interface section to send a transport

packet onto a 1394 transmission channel;

where the 1394 interface section sends a transport packet onto a 1394 transmission

channel in accordance with transmission timing calculated by the transmission timing

generating section.

84. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 71, a reproducing section to read a transport stream

having transmission timing information recorded on a disk, a timing adjustment section to

reproduce transmission timing in accordance with the transmission timing information of a

transport stream having transmission timing information, and a 1394 interface section to send

transport packets onto a 1394 transmission channel;

where the 1394 interface section sends transport packets onto the 1394 transmission

channel in accordance with the transmission timing reproduced at the timing adjustment

section.

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85. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data recording apparatus according to claim 72, a reproducing section to read a transport stream having transmission timing information recorded on a disk, a timing adjustment section to reproduce transmission timing in accordance with the transmission timing information of a transport stream having transmission timing information, and a 1394 interface section to send transport packets onto a 1394 transmission channel;

where the 1394 interface section sends transport packets onto the 1394 transmission channel in accordance with the transmission timing reproduced at the timing adjustment section.

86. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data recording apparatus according to claim 73, a reproducing section to read a transport stream having transmission timing information recorded on a disk, a timing adjustment section to reproduce transmission timing in accordance with the transmission timing information of a transport stream having transmission timing information, and a 1394 interface section to send transport packets onto a 1394 transmission channel;

where the 1394 interface section sends transport packets onto the 1394 transmission channel in accordance with the transmission timing reproduced at the timing adjustment section.

87. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data recording apparatus according to claim 74, a reproducing section to read a transport stream having transmission timing information recorded on a disk, a timing adjustment section to

reproduce transmission timing in accordance with the transmission timing information of a

transport stream having transmission timing information, and a 1394 interface section to send

transport packets onto a 1394 transmission channel;

where the 1394 interface section sends transport packets onto the 1394 transmission

channel in accordance with the transmission timing reproduced at the timing adjustment

section.

88. (New) An AV data reproducing apparatus comprising a disk recorded by using an AV data

recording apparatus according to claim 75, a reproducing section to read a transport stream

having transmission timing information recorded on a disk, a timing adjustment section to

reproduce transmission timing in accordance with the transmission timing information of a

transport stream having transmission timing information, and a 1394 interface section to send

transport packets onto a 1394 transmission channel;

where the 1394 interface section sends transport packets onto the 1394 transmission

channel in accordance with the transmission timing reproduced at the timing adjustment

section.

89. (New) An AV data recording method comprising:

dividing an audio signal and a video signal into transport packets and assembling a

plurality of the transport packets as a transport stream, and recording the transport stream;

the method further comprising:

managing whether a logical block on a disk is used, detecting a continuous data area

that ensures realtime continuous reproduction of the audio signal and the video signal, and

determining a logical block number of the continuous data area on which the transport stream

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is to be recorded;

wherein the transport stream is recorded continuously on the plural continuous data

areas that have been detected.

90. (New) The AV data recording method according to claim 89, wherein the continuous data

area comprises plural continuous logical blocks that enable recording at a maximum

recording/reproducing rate during at least a period required for securing reproduction data for

a maximum move time of a reading/writing head in the detection of the continuous data area.

91. (New) The AV data recording method according to claim 89, wherein the transport stream

is assembled by dividing an audio signal and a video signal transport packets, configuring the

plural transport packets for a predetermined time length as one unit packet, and by aligning the

unit packets.

92. (New) The AV data recording method according to claim 90, wherein the transport stream

is assembled by dividing an audio signal and a video signal transport packets, configuring the

plural transport packets for a predetermined time length as one unit packet, and by aligning the

unit packets.

93. (New) The AV data recording method according to claim 89, wherein a transport stream

comprising transport packets based on digital broadcast using MPEG is assembled while the

transport stream is assembled.

94. (New) The AV data recording method according to claim 90, wherein a transport stream

comprising transport packets based on digital broadcast using MPEG is assembled while the

transport stream is assembled.

95. (New) An AV data recording method comprising:

dividing an audio signal and a video signal into PES packets and assembling a

plurality of the PES packets as a PES stream, and recording the PES stream;

the method further comprising: managing whether a logical block on a disk is used,

detecting a continuous data area that ensures realtime continuous reproduction of the audio

signal and the video signal, and determining a logical block number of the continuous data

area on which the PES stream is to be recorded;

wherein the PES stream is recorded continuously on the plural continuous data areas

which have been detected.

96. (New) The AV data recording method according to claim 95, wherein the continuous data

area comprising the plural continuous logical blocks that enable recording at a maximum

recording/reproducing rate during at least a period required for securing reproduction data for

a maximum move time of a reading/writing head is detected during detection of the continuous

data area.

97. (New) The AV data recording method according to claim 95, wherein the transport stream

is assembled by dividing an audio signal and a video signal into PES packets, configuring the

plural PES packets for a predetermined time length as one unit packet, and by aligning the unit

packets.

98. (New) The AV data recording method according to claim 96, wherein the transport stream

is assembled by dividing an audio signal and a video signal into PES packets, configuring the

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plural PES packets for a predetermined time length as one unit packet, and by aligning the unit packets.

99. (New) An AV data recording method comprising:

deleting data by controlling writing of data in a logical block on a disk and reading of data recorded in a logical block;

wherein a part of data recorded as one file on a plurality of logical blocks is deleted, by dividing the data area into three areas comprising an effective data area before a deletion area, an effective data area within the last of logical blocks including the deletion area, and an effective data area following the last logical block,

closing forward undeleted effective data being present within the last logical block inside the last logical block, and

treating the three areas as one file.

100. (New) An AV data recording method comprising:

assembling an audio signal and a video signal as a system stream, and recording the system stream;

the method further comprising:

managing whether a logical block on a disk is used or not,

detecting a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and

determining a logical block number of the continuous data area on which the system stream is to be recorded;

wherein the AV data recording method further comprises:

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continuous recording of the system stream on the plural detected continuous data areas

and at the same time, recording of a plurality of dummy data whose total size is equal to a

logical block area in the logical block, and

replacing only the dummy data with audio data at the time of post-recording.

101. (New) The AV data recording method according to claim 100, wherein during a

replacement of only the dummy data with audio data in the post-recording, the system stream

is recorded continuously on a plurality of the detected continuous data areas and at the same

time, a plurality of dummy data that are larger in total size than a logical block are recorded in

at least one logical block; and

only the dummy data included in a predetermined logical block are replaced with

audio data at the time of post-recording.

102. (New) An AV data recording method comprising:

deleting data by controlling writing of data in a logical block on a disk and reading of

data recorded in a logical block;

wherein a part of data recorded as one file on a plurality of logical blocks is deleted

by treating a first half and a latter half of the data as one file, when the first half comprises a

dummy packet added to the back of an effective data area before the deletion area until data of

an effective data area preceding the deletion area reaches a border of logical blocks, and the

latter half comprises a dummy packet added to provide packets continuously before an

effective data area after the deletion area ranging from the border of the logical block to the

starting point of the effective data area following the deletion area.

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103. (New) An AV data recording method comprising:

deleting data by controlling writing of data in a logical block on a disk and reading of data recorded in a logical block;

wherein when a former part of data recorded as one file on a plurality of logical blocks is deleted as a deletion area and a latter part is retained as an effective data area,

data comprising a dummy packet are added to provide packets continuously before the effective data area ranging from a border of a logical block preceding an end of the deletion area to an end of the effective data area, and also the effective area are treated as one file.

104. (New) An AV data recording method comprising:

writing data in a logical block on a disk and writing the data management information written on a logical block;

wherein during the writing of data management information, the data management information comprises a starting position of the data on a logical blocks, length of the data, and identification of a logical block on which the data are written.

105. (New) An AV data recording method comprising:

deleting data by controlling writing of data in a logical block on a disk and reading of data recorded in a logical block;

the data writing comprising writing separately data management information comprising a starting position of the data on a logical block, a length of the data and identification of a logical block on which the data are written;

the data deletion comprising, when a part of data recorded as one file on a plurality of logical blocks are deleted, the data being divided into two areas: an effective data area before a

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deletion area and an effective data area following the deletion area, and the two areas are treated as one file.

106. (New) The AV data recording method according to claim 99, wherein a DIT packet is inserted additionally between the effective data area before the deletion area and the other effective data area after the deletion area so as to execute recording.

107. (New) The AV data recording method according to claim 102, wherein a DIT packet is inserted additionally between the effective data area before the deletion area and the other effective data area after the deletion area so as to execute recording.

108. (New) The AV data recording method according to claim 105, wherein a DIT packet is inserted additionally between the effective data area before the deletion area and the other effective data area after the deletion area so as to execute recording.

109. (New) An AV data recording method comprising:

dividing an audio signal and a video signal into transport packets and assembling as a transport stream having transmission timing information by repeating a set of the transport packet and the transmission timing information for each transport packet, and

recording the transport stream having transmission timing information;

the method further comprising:

managing whether a logical block on a disk is used or not,

detecting a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and

determining a logical block number of the continuous data area on which the transport

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stream having transmission timing information is to be recorded;

wherein the transport stream having transmission timing information is recorded

continuously on the plural continuous data areas detected by the continuous data area detecting

section.

110. (New) The AV data recording method according to claim 109, wherein the transport

stream is assembled by dividing an audio signal and a video signal into transport packets,

configuring one unit packet by allocating repeatedly a set of a plurality of the transport packets

for a predetermined time length and the transmission timing information for every transport

packet, and by aligning the unit packets.

111. (New) The AV data recording method according to claim 109, wherein a transport stream

comprising the transport packets based on digital broadcast using MPEG is assembled.

112. (New) The AV data recording method according to claim 109, wherein a counter value of

27MHz is used as transmission timing information.

113. (New) The AV data recording method according to claim 109, wherein a counter value of

24.576MHz is used as transmission timing information.

114. (New) An AV recording method comprising:

receiving a transport stream in real time from a channel, and

recording the transport stream;

the method further comprising:

managing whether a logical block on a disk is used or not,

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detecting a continuous data area that ensures realtime continuous reproduction of the

transport stream, and

determining a logical block number of the continuous data area on which the transport

stream is to be recorded;

wherein the transport stream is recorded continuously on a plurality of the continuous

data areas that have been detected.

115. (New) An AV data recording method comprising:

receiving a transport stream in real time from a channel, and

recording a set comprising a transport packet and reception timing information as one

transport stream having continuous transmission timing information;

the method further comprising:

managing whether a logical block on a disk is used or not,

detecting a continuous data area that ensures realtime continuous reproduction of the

transport stream having transmission timing information, and

determining a logical block number of the continuous data area on which the transport

stream having transmission timing information is to be recorded;

wherein the transport stream having transmission timing information is recorded

continuously on a plurality of the continuous data areas that have been detected.

116. (New) An AV data reproducing method comprising:

reading a transport stream on a disk recorded in accordance with an AV data

recording method according to claim 89,

calculating a timing for transmitting a transport stream in accordance with MPEG

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standard, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in

accordance with the calculated transmission timing.

117. (New) An AV data reproducing method comprising:

reading a transport stream on a disk recorded in accordance with an AV data

recording method according to claim 90,

calculating a timing for transmitting a transport stream in accordance with MPEG

standard, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in accordance with

the calculated transmission timing.

118. (New) An AV data reproducing method comprising:

reading a transport stream on a disk recorded in accordance with an AV data

recording method according to claim 91,

calculating a timing for transmitting a transport stream in accordance with MPEG

standard, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in

accordance with the calculated transmission timing.

119. (New) An AV data reproducing method comprising:

reading a transport stream on a disk recorded in accordance with an AV data

recording method according to claim 92,

calculating a timing for transmitting a transport stream in accordance with MPEG

standard, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in

accordance with the calculated transmission timing.

120. (New) An AV data reproducing method comprising:

reading a transport stream on a disk recorded in accordance with an AV data

recording method according to claim 93,

calculating a timing for transmitting a transport stream in accordance with MPEG

standard, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in accordance with

the calculated transmission timing.

121. (New) An AV data reproducing method comprising:

reading a transport stream on a disk recorded in accordance with an AV data

recording method according to claim 94,

calculating a timing for transmitting a transport stream in accordance with MPEG

standard, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in accordance with

the calculated transmission timing.

122. (New) An AV data reproducing method comprising:

reading a transport stream having transmission timing information on a disk recorded

in accordance with an AV data recording method according to claim 109,

reproducing transmission timing in accordance with transmission timing information

of the transport stream having transmission timing information, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in

accordance with the reproduced transmission timing.

123. (New) An AV data reproducing method comprising:

reading a transport stream having transmission timing information on a disk recorded

in accordance with an AV data recording method according to claim 110,

reproducing transmission timing in accordance with transmission timing information

of the transport stream having transmission timing information, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in accordance with

the reproduced transmission timing.

124. (New) An AV data reproducing method comprising:

reading a transport stream having transmission timing information on a disk recorded

in accordance with an AV data recording method according to claim 111,

reproducing transmission timing in accordance with transmission timing information

of the transport stream having transmission timing information, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in accordance with

the reproduced transmission timing.

125. (New) An AV data reproducing method comprising:

reading a transport stream having transmission timing information on a disk recorded

in accordance with an AV data recording method according to claim 112,

reproducing transmission timing in accordance with transmission timing information

of the transport stream having transmission timing information, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in accordance with

the reproduced transmission timing.

126. (New) An AV data reproducing method comprising:

reading a transport stream having transmission timing information on a disk recorded

in accordance with an AV data recording method according to claim 113,

reproducing transmission timing in accordance with transmission timing information

of the transport stream having transmission timing information, and

sending transport packets onto a 1394 transmission channel;

wherein the transport packets are sent onto the 1394 transmission channel in accordance with

the reproduced transmission timing.

127. (New) A disk recorded by using an AV data recording apparatus according to claim 51.

128. (New) A disk recorded by using an AV data recording apparatus according to claim 61.

129. (New) A disk recorded by using an AV data recording apparatus according to claim 64.

130. (New) disk recorded by using an AV data recording apparatus according to claim 67.

131. (New) A disk recorded by using an AV data recording apparatus according to claim 71.

132. (New) A disk recorded by using an AV data recording apparatus according to claim 76.

133. (New) A disk recorded by using an AV data recording apparatus according to claim 77.

134. (New) A disk recorded by using an AV data recording method according to claim 89.

135. (New) A disk recorded by using an AV data recording method according to claim 99.

136. (New) A disk recorded by using an AV data recording method according to claim 102.

137. (New) A disk recorded by using an AV data recording method according to claim 105.

138. (New) A disk recorded by using an AV data recording method according to claim 109.

139. (New) A disk recorded by using an AV data recording method according to claim 114.

140. (New) A disk recorded by using an AV data recording method according to claim 115.

REMARKS

The above preliminary amendment is made to correct minor errors in the specification and drawings, and to remove multiple dependencies from claims 1-50.

Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 371.5237.

Respectfully submitted,

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DPM/tvm

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MARKED-UP COPY

Marked-up paragraph at page 5, line 17:

FIG. 33 shows a record content in an AV data recording/reproducing apparatus using a DVD-RAM, and the content is subject to post-recording. When a MPEG program stream that will be post-recorded is recorded in DVD-RAM as shown in FIG. [17] <u>27</u>, a section 10 generating dummy packet for post-recording shown in FIG. [12] <u>33</u> executes recording by mixing V_PCKs, A_PCKs and also dummy packets (hereinafter, each dummy packet is referred to as "D_PCK"). During post-recording (in recording the secondary audio), only the video (or a video and the secondary audio) is reproduced, and at the same time, compressed secondary audio is padded in the D_PCK location as a separate secondary audio other than the primary audio.

Marked-up paragraph at page 24, line 31:

FIG. 35 is a diagram showing a recording form of [an AV data recording apparatus] <u>an AV data recording/reproducing apparatus</u> in an example of the present invention.